as a convenient, though necessarily condensed, account of essential points in inorganic and organic chemistry, and it will doubtless remain a popular volume of ready reference for students.

MESSRS. C. GRIFFIN AND CO. have published a second edition of the late Dr. Alder Wright's work on "Animal and Vegetable Fixed Oils, Fats, Butters, and Waxes," edited and partly rewritten by Mr. C. A. Mitchell. The scope of the work has been extended in the direction of the requirements of practical chemists, more details being given of analytical methods and processes for detecting adulteration of individual oils. The systematic description of tests for adulteration occupies 222 pages, and consists almost entirely of new matter.

THE additions to the Zoological Society's Gardens during the past week include a Vervet Monkey (*Cercopithecus lalandii*) from South Africa, presented by Mr. A. F. Putz; a Lesser White-nosed Monkey (*Cercopithecus petaurista*) from West Africa, presented by Dr. S. Carew; a Sooty Mangabey (*Cercocebus fuliginosus*) from West Africa, presented by Mr. Frank Ree; a Getulian Ground Squirrel (*Xerus getulus*) from Morocco, presented by Mr. D. Seth Smith; two Green Lizards (*Lacerta viridis*), European, presented by Mr. R. E. McLaren; a Chimpanzee (*Anthropopithecus troglodytes*, ♂) from West Africa, two Suricates (*Suricata tetradactyla*) from South Africa, an Indian Coucal (*Centropus rufipennis*) from India, deposited.

OUR ASTRONOMICAL COLUMN.

THE ROTATION PERIOD OF SATURN.—In No. 3900 of the *Astronomische Nachrichten*, Mr. W. F. Denning gives a *résumé* of his observations of the white spots which have been visible on Saturn since July 1; out of thirty-two observing nights only seven were recorded as giving "good seeing." Mr. Denning finds it difficult to reconcile the rotation period observed with that usually given, *i.e.* 10h. 15m., but finds that a period of 10h. 39⅓m. agrees with the observations much better. As the mean of many observations of seven of the markings, he obtains the period 10h. 39m. 21·1s., so that if the bright spot discovered by Prof. Hall in December, 1876, near to the equator of Saturn, really represented, in its period of 10h. 14m. 23·8s., the rotation of that part of the planet, there is a difference of 25 minutes between the equatorial and the north temperate currents, the latter being the slower; this is in accordance with the Jovian phenomena, where the north temperate markings take 5½ minutes longer for one rotation than do the equatorial markings.

A collection of the observations, made by various observers, of Barnard's large white spot indicates a rotation period of 10h. 38m. for that region of the planet.

NEWLY DETERMINED STELLAR RADIAL VELOCITIES.—From spectrograms obtained at Potsdam with the spectrograph No. iv., in conjunction with the 32·5cm. refractor, Prof. Vogel has determined the radial velocities of β Arietis, ω Ursæ Majoris, and ε Ursæ Majoris. From measurements of the magnesium line at λ 4481, he has found the relative velocity in the line of sight of the components of β Arietis to be between 60 and 70km., of ω Ursæ Majoris about 45km., and of ε Ursæ Majoris about 15–20km. (*Astronomische Nachrichten*, No. 3898).

REPORT OF THE CAPE OBSERVATORY.—In his report of the Cape Observatory for the year 1902, H.M. Astronomer, Sir David Gill, refers to several additions and improvements of the instrumental equipment.

The new 24-inch Zeiss objective prism, presented to the observatory by Dr. Frank McClean, F.R.S., is now ready for mounting, and has a refracting angle of 11⅓°.

The oppositions of Uranus, Saturn, Jupiter, and Neptune were observed with the heliometer, and 476 observations of α Centauri were made in connection with a redetermination of the parallax of that star undertaken by Messrs. Cookson and Lowinger.

Two hundred and eighty successful spectra of stars ranging in magnitude from 3·5 to 5·5 were obtained with the 24-inch "Victoria" telescope fitted with the "Grubb" objective prism.

In connection with the astrographic chart work 522 triple charts have now been taken, and 434 plates, containing 248,921 stars, have been completely measured up to date.

The geodetic survey of South Africa is being carried out despite climatic difficulties, but the determination of the Anglo-German boundary in south-west Africa has been delayed by the imperative necessity for giving the workers a rest and a change of climate; the whole of the triangulation is, however, complete.

LIVERPOOL ASTRONOMICAL SOCIETY.—The first annual report of this society shows that a successful session has been held. The Society possesses a fine 5-inch equatorial by Cooke and Sons, of York, a 3-inch transit instrument, a sidereal clock, and a valuable library.

Amongst the papers read during the session, and summarised in the report, may be noted the presidential address, entitled "The Nebular Hypothesis," by Mr. W. E. Plummer; "Sun-spots and Terrestrial Magnetism," by Father Cortie, S.J. (a vice-president); and an account of a visit to the Yerkes Observatory by the Rev. R. Killip, secretary of the Society.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

A SCHOOL of electricity is to be established in connection with the Harris Institute, Preston. The cost will be defrayed out of a legacy of 2000*l.* left for the purpose of advancing mechanical and electrical engineering by the late Mr. J. Billington Booth, of Preston. Of the bequest, 1000*l.* will be devoted to the electrical engineering department, which will be under the superintendence of Mr. G. E. Gittins.

FROM the calendar for the session 1903–4 of the Bristol University College we learn that, excluding medical students, there were 285 day students during the session 1902–3, and 751 evening students. The subscriptions to the sustentation fund for the same year amounted to more than six hundred pounds; a special fund of 5500*l.* has been completed, and amongst other amounts from various persons and public bodies, the Bristol Town Council has contributed five hundred pounds for fifteen free studentships.

Science announces that Prof. J. Mark Baldwin, of Princeton University, has been called to a new chair in philosophy and psychology in the Johns Hopkins University, where it is proposed to organise a university department in these subjects. Dr. E. W. Scripture, assistant professor of experimental psychology at Yale University, has resigned and is succeeded by Dr. Charles H. Judd. Dr. Scripture is spending the year at Leipzig, where he is carrying on researches on the analysis of speech by means of gramophone records, under the auspices of the Carnegie Institution.

As is customary at this time of the year, we have recently received a number of prospectuses of technical institutions, and to some of them reference has already been made in these columns. The polytechnics of London appear to try, year by year, to make their courses of study more and more attractive to practical workmen as well as increasingly useful. The workshops in them are excellently equipped, and the practical demonstrations and lectures in connection therewith should prove of great benefit in supplying workmen with a knowledge of the scientific principles upon which their particular branches of technology are based. It is gratifying to observe a tendency towards specialisation on

the part of the various polytechnics, and a growing disposition to give prominent attention to the industries in their immediate neighbourhood. Thus at the Northampton Institute in Clerkenwell there are, in addition to many other classes, a department of electrochemistry to meet the needs of the men in the numerous workshops in the district engaged in the electroplating industry, and a horological department for the large numbers employed in clock and watch making. At the Borough Polytechnic there are, besides numerous other courses of study, a special school of bakery and confectionery managed by the Association of Master Bakers and Confectioners, and a branch institution at Bermondsey is concerned with leather manufacture in all its branches. Some other polytechnics, though not perhaps specialised yet to the same extent as those mentioned, have numerous trade classes; at the Battersea Polytechnic, for example, the prospectus shows that mechanical and electrical engineers, men in the building trades, and those employed in technical applications of chemistry, can all find classes designed to meet their requirements.

SOCIETIES AND ACADEMIES.

PARIS.

Academy of Sciences, September 14.—M. Bouquet de la Grye in the chair.—The simplicity of the spectra of the kathode light in gaseous compounds of nitrogen and carbon, by M. H. **Deslandres.** The kathode ray spectra of carbon monoxide, carbon dioxide, and acetylene have been studied. In the luminous part already known, and in the first half of the ultra-violet region (λ 400 to λ 300), the kathode light gives nearly the same spectrum as the light from the positive pole, but in the second half of the ultra-violet (λ 300 to λ 200) it gives a characteristic spectrum, a new band spectrum in addition to the five band spectra of carbon already known, characterised by a remarkable simplicity in the arithmetical relations of the bands.—The action of a trace of water on the decomposition of the alkaline hydrides by acetylene, by M. Henri **Moissan.** Dry acetylene gas only reacts with potassium hydride at a temperature of 42° C. or higher; if the gas, however, contains a trace of water, the reaction can take place at the ordinary temperature. This is attributed to the disengagement of heat which occurs when the reaction is started at any one point, which determines a rise of temperature to more than 42°, after which the combination becomes total.—On equations of differences possessing a fundamental system of integrals, by M. Alph. **Guldberg.**—Description of a localised storm, by M. Jean **Mascart.**—On the resistance of *Gasterosteus aculeatus* to changes of osmotic pressure in the surrounding medium, by M. Michel **Siedlecki.**

GÖTTINGEN.

Royal Society of Sciences.—The *Nachrichten* (physico-mathematical section), part iv. for 1903, contains the following memoirs communicated to the Society:—

June 27.—Ed. **Riecke**: On the nearly-saturated current in an air-space bounded by two concentric spheres. W. **Voigt**: Contribution to the theory of light for active crystals. On specific optical properties of hemimorphous crystals. Ph. **Furtwängler**: On the construction of a certain *Klassenkörper* (domain).

July 11.—O. **Wallach**: Researches from the Göttingen University Chemical Laboratory, xii. (1) On the transformation of cyclic ketones into bases of nitrogenous ring-systems; (2) on a new cyclic base from methylheptenone; (3) on the behaviour and constitution of menthenone. J. **von Braun**: Contribution to our knowledge of tetravalent oxygen.

July 25.—Ed. **Riecke**: On nearly-saturated currents between two parallel planes.

NEW SOUTH WALES.

Linnean Society, July 29.—Dr. T. Storie Dixson, president, in the chair.—The continental origin of Fiji, by Mr. Walter G. **Woolnough.** Part ii., petrology. The rocks now described fall chronologically into two groups:—(1) a Palæozoic, or even older group, of quartzites, slates, jointed tuffs, granites and quartz-diorites; and (2) a Cainozoic group of andesites, olivine-andesites akin to basalts, "soap-stones," and molluscan and coral limestones.—The bacterial origin of the gums of the arabin group, by Dr. R. Greig **Smith.** x. The pararabin gum of Sterculia. The gum of *Sterculia diversifolia* consists of a mixture of arabin and pararabin. The arabin is produced by *Bact. acaciae.* Another organism, *Bact. pararabinum* n.sp., was isolated from the gummed fruits, &c. Upon solid media and in solutions containing saccharose, dextrose, levulose, galactose, mannite or glycerine, a slime was formed. By appropriate treatment this yielded a pararabin gum which was soluble in dilute acids and insoluble in dilute alkalies. It was not hydrolysed by boiling 5 per cent. sulphuric acid, but by treatment with concentrated sulphuric acid the carbohydrate was converted into arabinose and galactose. The bacterium did not secrete invertase, and in solutions of saccharose formed carbon dioxide, ethyl alcohol, succinic, acetic, butyric and formic acids.—Australian fungi, new or unrecorded, decades v.–vi., by Mr. D. **McAlpine.** A new genus of Hyphomycete is proposed, to include a form parasitic upon the flowering stems of *Lobelia gibbosa,* Labill.; also eighteen species, referable to thirteen genera. *Phoma lobeliae,* B. and Br., and *Seynesia banksiae,* Henn., are recorded.

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